Scientific American.

THE ADVOCATE OF INDUSTRY, AND JOURNAL OF SCIENTIFIC, MECHANICAL AND OTHER IMPROVEMENTS.

VOL. 2. NEW YORK, SEPTEMBER 11, 1847. NO 51.

THE
SCIENTIFIC AMERICAN :
PUBLISHED WEEKLY.
At 128 Fulton Street, New York (Sun Building,) and 13 Court Street, Boston, Mass.
By Munn & Company.
The Principal Office being at New York.

TERMS :—$2 a year—$1 in advance, and the remainder in 6 months.
☞See Advertisement on last page.

POETRY.

FULTON THE MECHANIC.

BY LUDI MAGISTER.

Immortal Great ! grey headed years
Bear onward Cæsar's fame ;
But when time that no longer bears,
A child shall lisp thy name.
Thou art not dead, thy spirit rides
Upon the iron way--
Wings where the ocern steamer glides,
Like sea-bird when at play.

Who'll be thy bard ? great Milton sleeps,
And hush'd is Byron's song ;
As all shall fall, Death never weeps,
But fiercely strides along ;
No brow is crowned to touch the lyre
O'er which their fingers ran,
None else for thee may smite the wire,
O, mighty artisan.

Though mingles each successive year,
The dust of son and sire,
The future shall a mind uprear
Touched with poetic fire ;
He may not tell of Rome or Greece,
Or write of bloody war,
But sing how joyous heaven born peace
Rides o'er the earth afar.

How man has garnered in the flood,
Bound with an iron band,
And how the pondrous engine trod,
Swift winged through every land,
When Tartar fierce and Arab wild,
Start at his thunder tread,
And Ishmael wakes—that desert child,
To give the Gentile bread.

BUY THE TRUTH.

BY MISS M. O. YEATON.

Go thou in life's fair morning.
Go in thy bloom of youth,
And dig for thine adorning,
Thy precious pearl of truth.
Secure this heavenly treasure
And bind it on thy heart,
And let no earthly pleasure,
E'er cause it to depart.

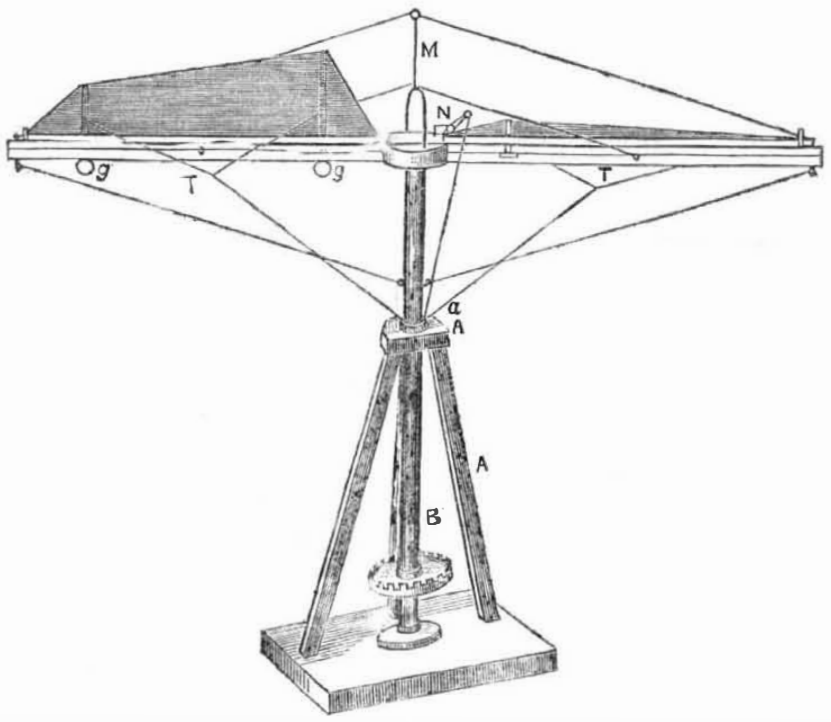
Go while the day star shineth,
Go while thy heart is light,
Go ere thy strength declineth,
While every sense is bright.
Sell all thou hast and buy it,
'Tis worth all earthly things—
Rubies, and gold, and diamonds,
Sceptres and crowns of kings.

Go, ere the cloud of sorrow,
Steal o'er the bloom of youth ;
Defer not till to-morrow,
Go now, and buy the truth,
Go, seek they great Creator,
Learn early to be wise ;
Go place upon the altar,
A morning sacrifice !

Them Boots.

Not long since, a raw Hoosier came aboard a steamboat above St. Louis. At night the Hoosier turned into his berth with his *boots* on. The steward, seeing this, said, "Sir, you have lain down in your boots." The raw one raised his head, and looking down at the boots, innocently replied, "Well, it won't hurt 'em, they ain't the best I've got."

WIND ENGINE.----Figure 1.



Although steam and water power have performed wonders and have revolutionised both science and art, yet who can doubt but there yet remains a great field for the display of mechanical genius and the application of that power which is "free as air." On our vast prairies, our southern and northern plains, far from rivers and where fuel is high, there must be a resort to wind power. Having been solicited to give information on Windmills and their uses, we take this opportunity of furnishing an engraving and description of this engine, the invention of Mr. Biddle, who has lately secured a patent for the same.

Figure 2.

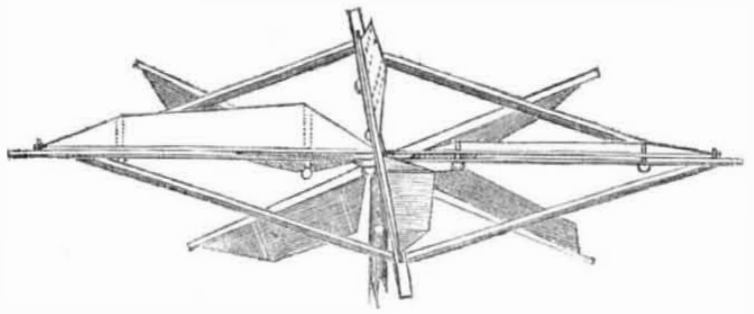


Fig. 1 of the engravings represents an Eolian Engine in its simplest form. The ground framing A, supports a vertical shaft B, which turns in an orifice through the centre of the platform A, and in a step at bottom. At the top of this shaft is a frame work, consisting of two cross-bars, supported at their outer ends by stays from an iron upright M. on the centre. On one of these bars, and running parallel with it, is a pair of sail-booms T, united at the centre by a metal tube, and each carrying a sail. These sails are fixed on the booms to work at right angles to each other so that when either one is vertical the other must be horizontal, and they are counterpoised by weights *g*, in order that they may take any change of position with ease, and the booms are hung so that they will turn freely on their axis. On exposing the engine in this state to the action of the wind, one of the sails will be immediately elevated to a vertical position, and the opposite one at the same moment depressed to a horizontal one ; when, as in the case of a common vane, the machine will swing round, in doing which, the impulse given and the action of the counterpoise are found sufficient to cause the sails to change positions, when the evolution is repeated, and rotary motion thereby communicated to the shaft, and it can be stopped or set in motion in a moment by the stop rod N.

Though perfectly serviceable in this simple form, the same framework may carry any required number of sails, and constitute an engine of greater power but with some degree of complexity. For example, fig. 2, shows the same machine hung with eight sails, four on the upper side, and four on the under, and each pair is at right angles to the other on the same side, and consequently neither sail takes the wind from the other, the power is by this arrangement quadrupled.

The principal advantage of this invention is the extremely simple and inexpensive form in which considerable power may be gained by it, as an engine of a single pair of sails will be certain in its action, and of a power proportioned to the breeze and the surface of sail exposed to it. Also, the universality of its application, as every man may avail himself of, and turn to motive power the wind which passes over his own premises.

A Woman's Wit.

"Mary, I am glad your heel has got well."

"Why ?" said Mary, opening wide her large blue eyes with astonishment.

"Oh, nothing," says Mag, "only I see it's *able to be out !*"

"Annexation and war, that's true, every word of it," said a pert old maid ; "no sooner do you get married than you directly begin to fight."

Silent Thunder.

An old woman in the country told us, the other day, that she couldn't see the use of having thunder with lightning. "It ain't no use," said she, "it only makes a great noise and frightens folks," "Madam," we asked, "how would silent thunder suit you ?" "Oh luddy suz, yes ! that's just what I should like !" she exclaimed, without giving herself time to think upon the nature of the article.

LIST OF PATENTS

ISSUED FROM THE UNITED STATES PATENT OFFICE,

For the week ending Sept. 4th, 1847.

To Robert M. Bicknell and Charles J. Abel, of Philadelphia, Penn., for improvement in Scrubbing Brushes- Patented Sept 4, 1847.

To John H. Fellows, of Cincinnati, Ohio, for improvement in the construction of Vessels. Patented Sept. 4, 1847.

To John Shugert, of Elizabeth, Penn., for improvement in the manufacture of Soap.—Patented Sept. 4, 1847. Ante-dated March 4, 1847.

To Jacob H. Bower, of Walnut, Penn., for improvement in the construction of lime kilns. Patented Sept. 4, 1847.

To James Thomas, of New York, for improvement in preparing India Rubber. Patented Sept. 4, 1847.

To H. G. Ellsworth, of Enfield, Conn., for improvement in feed roller for carding machines. Patented Sept. 4, 1847.

To George W. Tuttle, of New York, for improvement in machines for exercising children. Patented Sept. 4, 1847.

To George L. Mason, of Williston, Vermont, for improvement in preparing cotton and wool for carding. Patented Sept. 4, 1847.

To Charles L. Fleischmann, of Washington, D. C., for improvement in making mattresses, cushions, &c. Patented Sept. 4, 1847.

To Antoine Marie Felix Chevet, of St. James Parish, Louisiana, for improvement in making Sugar. Patented Sept. 4, 1847.

To George A. Philip, of New York, for improvement in Stove Grates. Patented Sept. 4, 1847.

To Wm. P. Barr, of New York, for improvement in type casting (having assigned his right to Bruce & Cortleyou.) Patented Sept. 4, 1847.

To Morton Judd, of New Britain, Conn., for improvement in Sash Fasteners. Patented Sept. 4, 1847.

DESIGNS.

To George W. Sizer and Henry Sizer, of Springfield, Mass , for Design for Stove. Patented Sept. 4, 1847.

INVENTORS' CLAIMS.

Stoves.

Re-issue.—No 99 ; To Samuel Pierce of Troy, N. Y., Assignor to Elias Johnson and David B. Cox, of Troy, N. Y., for improvement in Cooking Stoves. Patented 6th December, 1845. First re-issue dated 24th April, 1847 ; second re-issue dated 31st July, 1847. What he claims as his invention, and secures by Letters Patent, is making the top of the metal ovens of cooking stoves or fire bricks or other earthy substance, when this is combined with a stove in which the products of combustion from the fire chamber pass first over the top of the oven, substantially whereby the heat in the oven is equalized and the vapours or gasses evolved in the oven are absorbed and carried off. He also claims the arrangements of the parts by which he supplies the fire with heated air, said arrangement consisting mainly of the apertures in the front doors, in front of which the air must descend on its passage to the grate bars. The heating of the admitted air has been attempted under other arrangements, and he limits himself in this particular, therefore, to the special combination of parts by which he attains this. And finally, he claims making the plate of that part of the oven which extends under the grate, connected with the receptacle for ashes at the bottom, for the purpose of discharging the ashes that fall from the grate, whereby he is enable to heat this part of the oven more effectually and equally, and to avoid the burning out of the grates.

"Jim, your coat is too short." "Well what of it, it will be long enough before I get another."

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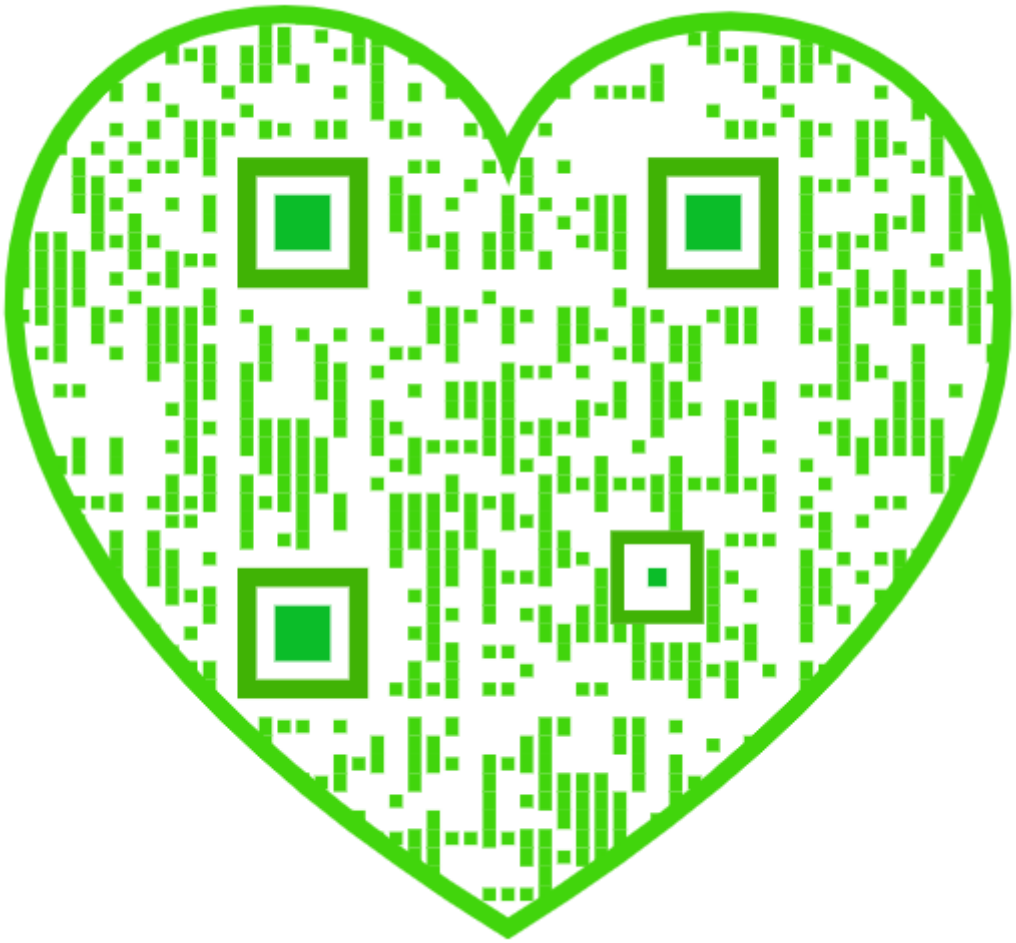

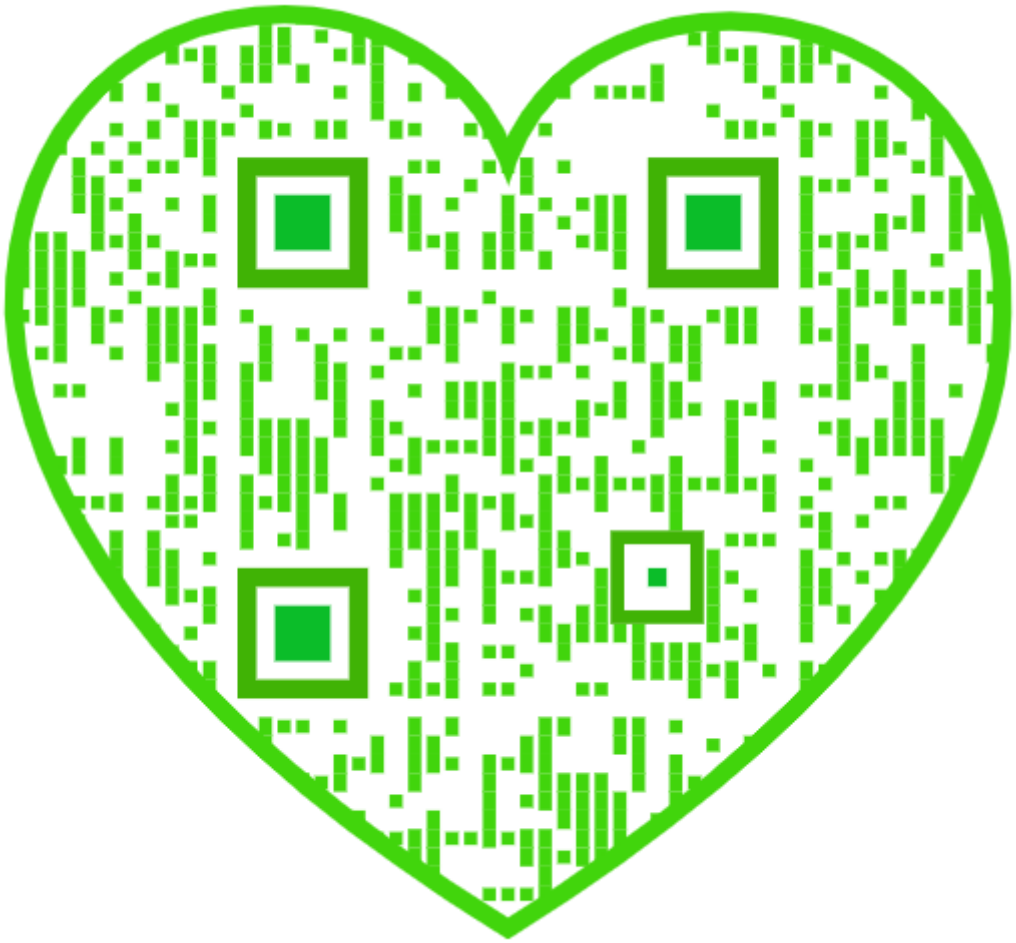

Collision on Lake Huron.

Last week, while the Steamer Nile was on her trip to Chicago she run into the Wisconsin crashing cranks, shafts, and wheels. The accident happened twenty miles below Fort Gratiot. The night was clear, and there was no reason for the collision except a *want of room.* The Nile was very badly stove, her starboard bow being cut down to near the water's edge. A few minutes after the collision the Nile resumed her course, but was hailed by the Wisconsin to come and tow her into the river, as the sea was so rough that she could not repair under such motion.—The Nile tacked about, and soon after coming along side, there was a cry on board the Wisconsin that "she was sinking!" Forthwith the passengers rushed helter-skelter for the Nile. Some dressed and some half-dressed and some with clothes in their hands. It is described as a most hideous night.

Water Power.

The mammoth water power at Weverton, Maryland, created by the gorge through the mountains at Harper's Ferry, by the junction of the Potomac and Shenandoah rivers, is about to be brought into use. The Philadelphia Ledger learns by a gentleman just returned from there, that the place has assumed a lively appearance : that the construction of the lower dam and the guard locks has been nearly completed, and that, in addition to some dwellings being put up, preparations are being made for the building of factories, a hotel and a church.

Cunard Line for New York.

On the 28th July the Niagara was launched at Glasgow, Scotland, and she is said to be a splendid vessel. The America was launched some time before, and the Europa will also soon be ready. These steamships are for the New York and Liverpool line ; they are 1800 tons burthen, and are said to be noble specimens of naval architecture. Robert Napier the gentleman who built the engines of the Boston line of steamers, is the engineer

Baggage Car Destroyed by Fire.

The baggage car attached to the passenger train, which left Syracuse last Tuesday morning, was discovered to be on fire when about six miles east of that place. Before the train could be stopped, the flames had made such progress that it was imposible to save the car, or any portion of its contents, which numbered about twenty packages and trunks, belonging to passengers. The fire is supposed to have originated from a spark thrown from the smoke pipe of the locomotive.

A Dark Clause.

The Constitutional Convention of Illinois have adopted, by a large majority, the following amendment to the Constitution of that State :—"The Legislature shall pass laws with adequate penalties, preventing the intermarriage of whites and blacks, and no colored person shall ever, under any pretext, hold any office of profit or honor in this State."

Steamboat Collision.

A steamboat collision case was tried in Cincinnati last week. The action was brought to recover damages by the owners of the steamboat Yorktown, against the owners of the Talma, to make good the loss sustained on freight thrown overboard to keep the former boat from sinking, and the jury returned a verdict in favor of the Yorktown for $9,980.

Lowell.

It is stated that 1,800,000 yards of cloth are made at Lowell, Mass., every week, amounting to 93,600,000 yards per year—enough to extend twice around the entire world! Sixty-five thousand bales of cotton are worked up annually. Of printed calico, there are made 14,000,000 yards per year. In these manufactories one million pounds of starch are used annually.

Mathematical Problems.

$20 *Reward* to the person who will first give all the magic variations to a square of 16 cells, containing the natural numbers from 1 to 16, by a general form.

$25 *Reward* to the person who will place the numbers from 1 to 36 inclusive in 36 cells in the form of a magic square, so that any 4, when anywhere taken in the form of a square shall amount to one ninth part of the sum of all the numbers, viz: 74—one ninth of latelnos-Romilth divided by 9. This square anciently represented the sun. Who dares to crack the seal. C. P. NEWTON.

Newark, N.J Sept. 4.

What a prize for mathematical investigation Indeed tis *quite* encouraging.

Cruelty to Animals.

A man named Francis Keeber was arrested on Saturday for cruelty to animals. It appears that a cow broke into his place, and in turning her out he threw an axe at her, cutting her very severely, so that she is not expected to live. He was held in $200 bail to answer. It is time that some attention was paid to the bitter treatment of animals.

Black Engineers.

All the engine drivers on the Jamaica, (W. I.) Railway are American blacks, who have undergone a strict examination by a European engineer, and who are said to discharge their duties with exemplary skill and attention.

New England Chesnut.

Chesnut sleepers are taken from Concord, N. H. to build the Havana (Cuba,) Railroad. Concord Chesnut, once nearly worthless, now bringing a high price, and shipped 200 miles to build railroads!

Water Cure in England.

The Hydropathic method of treating disease is attracting great attention in Great Britain as well as our own country. Men of high reputation for scientific research, are giving it a thoughtful examination.

Oldest Church.

In Hingham, Mass. they have the oldest inhabitable church in North America. There are the ruins of one in James-town, (Va.) which is older than this, but this is the oldest now occupied in the country. It was built one hundred and sixty years ago, and in it is some of the timber of the church built by the first settlers in 1635 or 6. It is perfectly sound, and almost as hard as iron.

The Girard College.

The bill to constitute the Girard College provides a President with a salary of $3,000 per annum, and a residence furnished on the grounds; a Matron at $800 dollars per annum; a Steward at $100 Female teachers 6 to $300, and Governesses at $200, but the latter to board with the matron.

The Spanish Real.

The Spanish Real in Massachusetts, is called a "ninepence," in New York a "shilling," in Maryland a "levy," in South Carolina "seven pence," and in Louisiana a "bit;" the half Real in Massachusetts "fourpence-ha'-penny," in New York "Sixpence," in Maryland a "fip," and in Louisiana a "picayune"

Immense Receipt of Wool.

All who desire to know the meaning of "wool gathering," says the Evening Bulletin, should pay a visit to the warehouse at Bingham and Co., one of our heaviest transporting houses. They have just received from the great West, via. Pittsburg, to be forwarded to Mr. Lawrence, of Lowel one million pounds of wool! equal to five hundred tons. Such a gathering of wool was never before seen in Philadelphia.

New Waterfall.

There has been a new water-fall discovered in the river of St. Louis. This cataract falls into the Western part of Lake Superior, which has not yet been described by the geogropher. It would not appear that this is second only to the Falls of the Niagara. The volume of water is immense, and the height of the fall is fifty feet.

There remains at the Post Office Department at Washington, a diamond ring, valued at one hundred dollars, returned in a dead letter.

Peppermint Manufactory

A correspondent of the Syracuse Journal states there is more Peppermint manufactured in Wayne County, in that State, than in all other parts of the United States. The writer states that a company of manufacturers of the oil from New York, have recently purchased the manufacturing establishment in Palmyra, with all the Mint now growing, and have also bound those engaged in the business not to grow the mint or make the oil for a certain number of years; for all which they have paid $200,000!

A Western Farmer.

Hon. H. L. S. Ellisworth, late U. S. Commissioner of Patents, is to be present at the New York State Agricultural Fair and Cattle-Show at Saratoga the middle of September. His zeal in the great cause of National industry has not abated. The results of his present experiments to test the comparative merits of cooked and uncooked food, and the value of certain crops for fodder are highly important. He has now 1,000 acres of Corn growing on one farm, which will doubtless exceed 50,000 bushels.

Heavy Bell.

During the past week, Mr. Andrew Meneely, of West Troy, disposed of a large and splendid Alarm Bell, weighing near 9,000 lbs.—This is said to be the largest Bell ever cast in the United States. Its tone was all that could be desired, and for beauty of finish could not be surpassed—in fact it appeared to have left the mould "as clean as a whistle"

American Bible Society.

This Society has been enlarging its operations, and is in need of more money. They keep three hundred hands employed daily in the manufacture of Bibles and Testaments, and print upwards of eight tons of paper per week. The issues now average two thousand volumes per day. The Society is in want of $2000 to send to France immediately.

Market Prices in Monterey.

The Governor has been obliged to regulate the provision market. The following scale is now enforced: Turkies, large size, $1—small size, 75 cents; chickens, full size, 25 cents—small size, 6 cents; eggs, 25 cents.

A Baltimore paper chronicles the almost incredible fact, that a Dutch Woman was seen in that city, carrying on her back a barrel of flour. which her husband had just purchased; while he walked complacently along in front, smoking his pipe!

The highest fountain in the world is on the grounds of the Duke of Devonshire, in England, were a single jet thrown up to a height of 267 feet, more than 100 feet higher than Niagara Falls. The eight acre reservoir which supplies it is 339 feet above.

The Clermont County Ohio, people are draining a mill pond on the east fork of the little Miami, for the purpose of getting at a monstrous snake, some 25 or 30 feet in length. The critter, it is said, has been seen by six or seven persons.

The Northampton Courier says the late Silas Wright was the sixth in descent from Samuel Wright, one of the first settlers of Springfield and Northampton, who died in 1665.

Fear had its birth the same day with sin; and the very dread of meeting God, which possessed Adam, still reigns in the human bosom—it is the shadow of guilt.

The War Steamer at the Navy Yard is going forward rapidly. The keel, 210 feet in length has been laid, and it is expected the frame will be up in the course of this week.

A snake of the *copper-head* species, was killed a few days since near Princeton. We understand that a company was immediately formed upon the spot for mining purposes.

Many of the farmers on the Pickaway plains Ohio, will average over 100 bushels of wheat to the acre.

In the Mexican Language, a *kiss* is written thus—*Tennamiquiliztli!* Think of asking a pretty girl for one.

Many an honest man needs help that has not the face to seek it.

PUBLISHER'S NOTICE.

We would inform those of our subscribers who are desirous of getting the present volume of the Scientific American bound, that we have made arrangements for getting a large lot bound for ourselves, and that we can get the work done much cheaper by the quantity than they can for a single one. We would, therefore, advise those desiring their volumes bound, to send their numbers to this office and get them covered in strong, durable binding for 75 cents, which at other places would cost them one dollar.

We would also request that those of our old subscribers who wish to continue the Scientific American another year, would send in their names as early as possible that, we may judge better how large an edition of No 1, volume 3d, it will be necessary to print.—And to Postmasters and others who feel disposed to advance the cause of Mechanical Science in this country, we would solicit the favor of their making the object of our journal as well known as possible to those who are not already acquainted with it, and as at the commencement of past volumes to get up clubs and thereby secure to themselves the benefit of a discount. Any person sending us four dollars shall be entitled to five copies of the Scientific American for 6 months, or by sending us $15 at one remittance, shall be entitled to 10 copies for one year.

We would also inform our subscribers to the Mechanics' Journal, that if they desire to commence with the 3d volume of Scientific American, which commences September 25th, we will transfer their names from the Mechanics' Journal to the Scientific American, on being advised of their wish by post paid communications and payment in full of all arrears It is well known that no attention is paid to letters containing orders for the Scientific American unless the subscription money accompanies them ; it will, therefore, be useless for the subscribers to the Mechanics' Journal to request a change unless they have paid in full for one year of the Journal from its commencement, or do so at the time they request the change. The Mechanics' Journal we shall cease publishing in about three months, and those wishing for unbroken files of the Scientific American had better have their names transferred to the American's subscription books at the commencement of the 3d volume

New York Lamp Depot.

This establishment, long known as "Fay's cheap lamp store," has recently been refitted, and is now one of the most splendid establishments of the kind in the city. It is located in the Sun building, Nos. 134 and 136 Fulton street, occupying two large stores and filled with the greatest variety of lamps, girandoles, chandeliers, &c., of any establishment in its vicinity. Mr J' O. Fay is the proprietor, and from a long acquaintance with the gentleman, we can assure the public that they can rely upon any article purchased at his store as being just as represented, and we certainly know of no better assortment to select from in the city than may be found at this depot.

Chambers' Miscellany.

No. 2 of this valuable work is published and for sale by Berford & Co , No. 2 Astor House. This is a work which every family ought to possess. Let subscribers send in their names—36 numbers for $6, or 25 cents per single number.

Woodworth's Planeing Machine.

This machine, which is advertised in another column has given most perfect satisfaction to those who have used them. We would call the particular attention of the public to their advertisement.

Patent Agency.

Applications for Patents made at this office, on the most reasonable terms. Neat drawings, specifications, and engravings of the first character, and cheaper than anywhere else. Notices of new inventions, Agency for the sale of Patent Rights, and all business of that nature, promptly attended to. Those who have patent rights to dispose of will find a good opportunity and field for their sale—such as Horse Power Machines and Waterwheels of every description. The largest circulation in the world for advertisements of inventions, &c.

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HOME AND FRIENDS.

Oh there's a power to make each hour.
As sweet as Heaven designed it,
Nor need we roam to bring it home.
Though few there are that find it!
We seek too high for things close by,
And lose what nature found us;
For life hath here no charms so dear,
As Home and Friends around us

We oft destroy the present joy
For future hopes—and praise them;
While flowers as sweet, bloom at our feet,
If we'd but stoop to raise them!
For things afar, still sweeter are
When youth's bright spell hath bound us;
But soon we are taught that earth has nought
Like Home and Friends around us.

The Friends that speed in time of need,
When Home's last reed is shaken,
To show us still, let come what will,
We are not quite forsaken;
Though all were night—if but the light
From Friendship's altar crown'd us,
'Twould prove the bliss of earth was this—
Our Home and Friends around us.

Tallacotius Outdone.

The Birmingham Journal relates, that recently a fight took place between some workmen who were drinking at a public house at Bilston, and one of them had his nose bitten off. He was taken immediately to a surgeon and the wounded parts were dressed to the, satisfaction of all present. The sufferer, however, on returning home, began to reflect on the unpicturesque effect which a countenance bereft of the nasal appenda ge would produ ce On a consultation with his friends, the idea occurred to them that possibly the lopped feature might be restored to its original post of honor. Accordingly they returned to the scene of action, and, after searching for nearly an hour, they at length discovered the object of their desire lying in a dark corner of the room, begrimed with dirt. Having secured their prize, they set off to a surgeon of the town, to whom they stated the case, and who very carefully united the parts together, and in a manner which completely restored the main element of facial beauty to its former shape and position; and a happy union of parts having ensued, the young man appears little the worse for his singular misfortune.

Unprecedented Railway Speed.

A trial was made on the 18th of June last, over seven miles of the London and Birmingham Railroad, of a new locomotive with driving wheels eight feet in diameter. It ran the seven miles, with a full train of twelve cars attached, over a grade of sixteen feet to the mile, in five seconds less than seven minutes, or at the rate of something over a mile a minute. At this tremendous velocity the engine is stated to have performed its work with perfect steadiness, and entire freedom from any lateral swaying or surging motion.

The trial was an interesting and important one on many accounts. It is the highest rate of speed ever attained on a railroad with a full train, and it was attained on a narrow guage, 4 feet 8½ inches between the rails, which, with a single exception, is the width of all roads in the United States. It was the largest driving wheel ever used, and seems to establish the fact not before believed that railway speed increases almost in direct ratio of the diameter of the driving wheels. One revolution of an 8 foot wheel covers twice as much ground as that of a 4 foot wheel. The Great Western Railroad of England, has a broad gauge, 7 feet between the rails. A few weeks since a train of twelve cars was drawn over the Boston and Worcester Railroad a distance of 44½ miles—by a new locomotive engine with a six foot driving wheel, in 78 minutes, or at the rate of 33 miles an hour. This is the greatest sustained velocity yet attained in this country with a full train of cars attached to the engine.

Steamboat Launch.

A steamboat capable of carrying about twelve hundred bales of cotton, was launched last week at Charleston, S C. She was built for the Georgia Steamboat Company, and is intended for the Savannah river trade.

Mechanics Associations.

That union is strength, is no less true than that knowledge is power. Knowledge points the finger to association and Hope reclines on her anchor wistfully looking forward to the period when Religion and Science shall make all men brothers. There is a great necessity for a thorough, sound and intelligent union among the mechanical and scientific men of the world, a union not of selfish feelings and hostile demonstrations against any class, but a hearty good will to all, and an energetic devotion to labor perseveringly for the honor and advancement of the mechanical classes. A number of associations having for their object the elevation of the mechanic have failed to realize any good thing, for the very reason that knowledge was always held subordinate to objects of vain and trifling importance.—Every Mechanics' Association, to do good and exercise a healthy, permanent influence, must cembine a mode of mutual benefit and cultivate scientific knowledge, never forgetting too, that morality is the mother of all good. It is quite possible for our mechanics to become more esteemed and respected if they would but just set themselves to work in good earnest with a determination to be successful.—The mechanics have great reason to be proud of such men as Franklin, Watt, Whitney and Arkwright, and a host of others. The memory of these great names ought to stimilate to noble actions and a better cultivation of knowledge connected with science and art. If the employers and steady intelligent journeymen throughout the United States would form associations, or step forward and assist those already formed, the good that would be done in a few years would be incalculable. There is one association in this State numbering, we believe, some forty different societies, and there are ten such, we believe, in Ohio. It is named the Mechanics' Mutual Protection. Its principles are good and if carried out fully by its members cannot fail of being very beneficial. It is an association that yet wants a great number of good mechanics to join it and it yet wants the establishment of regular scientific lectures and better means of imparting useful information. Without intelligence no good can be anticipated, with intelligence and integrity every thing may be expected. We are acquainted with the chief officer in this State and he is eminently respected by the whole order, and he is worthy of it It is to be hoped that by harmony and good will this association will go on prosperously for the future, as it has in a great measure during the past year. To the present association belongs the honor or dishonor of success or failure. We rejoice at any scheme that has for its object the true elevation of the mechanic—by the means of virtue and knowledge.

Young Mechanics.

Always have a book within your reach, which you may catch up at your odd minutes. Resolve to edge in a little reading every day, if it is but a single sentence. If you can give fifteen minutes a day, it will be felt at the end of the year. Regulate your thoughts when not at study. A man is thinking even while at work. Why may he not be thinking about something that is useful? Revolve in your mind what you have last been thinking.

Dome Struck by Lightning.

A severe thunder squall passed over the city New Orleans lately, and one bolt struck the lightning rod attached to the flag-staff which surmounts the dome of the St Charles Hotel. The report was terrific, but the house was saved by the rod, the lightning passing to the earth by the chain running to it from the upper rod The chain was broken in one place, and in falling tore away the glass eyes or knobs by which it was secured and at the same time insulated. The house itself sustained no harm.

The Difference.

An *emigrant* is one who *migrates* or removes bag and baggage, out of a country. An *immigrant* is one who *migrates* into a country. The same person who was an *emigrant* at the begtnning of his journey or voyage, is an *immigrant* at the end of it, because it is evident that he has then got the bag, but not the baggage.

Chinese Notions of English Carriages.

The two elegant carriages made by Hatchett were objects of great admiration. But it was a puzzling question for the Chinese to decide which part was intended for the Emperor's seat. The neat and commodious seats with their cushions inside, with the windows and the blinds, and every part within, were elegantly fittted for the reception of none but the monarch. But then a question arose who was to occupy the elevated position, with its splendid hammer-cloth, edged with gold and decorated with festoons of roses? To determine the disputed point, the old eunuch, who had a particular affection for the carriages, applied to me, and when told the Emperor's place was within, and that the elevated seat was for the man that drove the horses, with the usual ejaculation of surprise, *hai ya!* he asked me if I supposed the *ta-whangtee* would suffer any man to sit above him, and to turn his back upon him? "That," he said, "will never do," and asked if the splendid coachbox could not be substituted for the seat within the carriage or placed behind it.

Lord Byron on Clean Hands.

In an amusing letter to a friend in Paris, in 1817, his Lordship said: 'I never was a great phrenologist, Pauline, nor do I pretend to read mankind as quickly as yourself, but if a stranger comes in, generally look at the state of his hands. To a gentleman, dirty hands are abomination—that settles one point. A respectable man never presents himself with dirty hands and foul nails—so if I find my customer with these credentials, I conclude that he is an idler, a drunkard, or a scamp, and I show him out as soon as possible.' Among the class in which Byron moved, those remarks were undoubtedly correct, but to the mechanic in his working hours, unclean hands is his badge of knighthood. Mechanics never should be ashamed of dirty hands in the hours of labor.

Emigration.

Lord Monteagle, in Parliament, in course of some remarks on the subject of emigration, said that from 1825 to 1846, inclusive 1,470,-00 persons had emigrated to the British Colonies and to the United States.

"The cause of this was, that while there was nothing but torpor and inactivity, on the British American side, and all seemed waste and desolate; on the side of the United States as appeared from Lord Durham's report, all was energy and activity, and, consequently, wages were higher, and capital gave them a large return. This was not owing to any natural or political advantages possessed by the United States, but to the energetic temperament of the people of that country. He was not speaking of Canada West, where great activity prevailed; he, therefore, called on the house to contribute to make the colonies as attractive to the emigrant as the U. States."

Earl Grey, in speaking upon the same subject, said that the Emigration to America this year would not fall short of from 200,000 to 300,000—the number who had already emgrated reaching 120,000.

Serious Railroad Accident.

A serious railroad accident occurred about two miles from Niagara Fallls on Monday forenoon. The morning train which leaves at 11 o'clock for Lewiston dropped through the track and ran off the embankment, capsizing the car, which was crammed full of passengers, and injuring more or less every person in it. The Express agent from Buffalo to Canada, had his wrist put out of joint, and his arm broken.

Iron Works Sold.

The Mount Savage Iron Works are to be sold on the 9th of October, under execution, at the suit of the English bond holders and others. The property consists of a rolling mill, 200 by 175 feet, furnaces, &c,. on the largest scale—a railroad, nine miles long—about five hundred acres of land, valuable for their coal, iron ore, and fire clay, and for farms various buildings and improvements, icluding 280 houses, personal property &c.

The second child born in Cincinnati still lives, and has not seen the middle age of life, while that city contains 80,000 inhabitants.

Drainage of Haarlem Lake.

One of our London Exchanges says:—We learn from a source on which we can rely, that the drainage of Haarlem Lake, in Holland, progresses satisfactorily; and that other engines, with improvements, are now constructing at Cornwall to hasten the completion of that great work. When finished, it is understood, the sewerage of all cities and great towns bordering on the lake will, by the same engines, be conveyed to and over the surface of the bed of the lake to irrigate it; so that in all human probability, fifty-six thousand acres now covered with water, and the waste land adjoining, will, within the next seven years, be furnishing corn and cattle to the Dutch and London markets—the result of science, combined with practice. We learn, also, that the same parties who are engaged in this magnificent undertaking are in communication with the Egyptian Government on the subject of employing similar engines to irrigate districts above the ordinary rise of the Nile, for the purpose of growing cotton, flax, &c. &c. It will be remembered that we gave an engraving and description of this massive engine in No. 9 of the present volume of the Scientific American.

Splendid Engine Depot.

The Baltimore and Ohio Railroad Company have just erected, at their Mount Clare Depot, another building for the accommodation of their locomotives, of the most complete and convenient arrangement, as well as a beautiful specimen of architectural skill. Its form, at a distance, appears to be circular, but it is in reality a polygon of sixteen sides, in each of which is a doorway of sufficient capacity for the entrance of the largest class locomotive. The diameter of the building is 150 feet, the centre of which is occupied by a very large *turn-table*, by which the engines and tenders may be shifted to the different tracks, which form divergent rows from the centre of the house; in this way ample accommodation is made for sixteen engines and tenders, or double that number of engines without tenders. The frame work of this extensive roof is entirely of iron, the central part supported by eleven cast iron columns. This much of the roof rises several feet above the surrounding portion. giving it the appearance of an ornamental dome, the sides of which are formed of cast iron. The covering of the roof is slate, laid immediately on the iron frame work.

Good Advice.

A young fox asked his father, (says the Persian fable,) if he could not teach him some trick to defeat the dogs if he should fall in with them. The father had grown grey in a long life of depredation and danger, and his scars bore witness to his narrow escapes in the chase, or his less honorable encounters with the faithful guardians of the hen roost. He replied, with a sigh, "after all my experience, I am forced to confess that the best trick is—to keep out of the way."

Langhter.

A hearty laugh occasionally, is an act of wisdom: it shakes the cobwebs of care from a man's heart; icicles of melancholy from his brains, and the hypochondria from his ribs, more effectually than champagne or blue pills. One of the emperors of Japan is said to have killed himself by immoderate laughing, on being told that the Americans were governed without a king.

A Match for Tom Thumb.

Mr. J. A. Thomas, residing in Beaver street, Philadelphia, has a match for Tom Thumb, in the person of a Miss Lizzy, who is represented as being eight years old, measuring about 25½ inches in height and weighing about 30 pounds. There is a peculiarity in her conformation by which she is enabled to put her feet on her shoulders, and also to arise from a sitting position on the floor without using her hands to aid her, and without bending the joints of the knees.

The Siberian gold mines seem to become more productive, as it is stated 428 poods of of gold in bars, equal to 21,032 lbs. English coming from the mines of Barnoul for the Russian mint, lately passed through Mijni Novogorod. The value of this bullion, in English money, is £1,188,500

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NEW INVENTIONS.

Thompson's Life Boat.

Mr. Nathan Thompson, Jr. of this city, has invented a life boat, which promises to be a most invaluable invention for saving life in cases of shipwrecks or accidents at sea. The body of his boat is solid, with the exception of ballast chambers, and it is constructed so as to be perfectly secure against rolling over. It can never be swamped in the heaviest sea, and it is provided with beckets, whereby persons may lash themselves firm to the deck. There is suitable security also for provisions and water. Measures are instituted to secure a patent, and at some future period we shall be able to present an engraving, with a more full description.

Improved Stocking Loom

Mr. John Pepper, a young man, of Portsmouth, N. H., has successfully applied water power to the working of the stocking frame, or loom, Three looms are now in successful operation in that place and work well, far better than the inventor or any other person anticipated. Last week one girl attended the three looms, and after spending much of her time in sitting to watch operations, she presented at night 23 pairs of stockings and 22 pairs of drawers as the result of her day's work. 12 pair of stockings is a girl's day's work on the common hand looms.

Some idea of the saving by this new invention may be formed from the fact that the expense of the knitting by it on the day mentioned was less than one dollar, while the same work performed on hand-looms would cost over five dollars. Any hand loom may be fitted for operation by power at an expense of $30 to $40. Newlooms can be made for this purpose at about three-fourth the expense of hand looms. The inventor is about 23 years of age, and son of a stocking weaver.

Improved Bee-Hive.

Mr. A. Kelsey, of Ohio, has patented we believe a most excellent improvement in the Bee-Hive. It affords positive and complete protection from the bee moth or miller, and is so arranged as to admit of a free circulation of air through it at all times. The honey can, *at any time*, be removed from the hive without disturbing the bees, or more can be added for the sustenance of the swarm if necessary, while the bees are kept healthy by *living in new comb*, all the time.

Patent Ink and Salts of Gold.

The Rev. Mr. Reade, of Aylesbury, England, has taken out a patent for an entirely new method of using iodine and the prussiate of potash, for making both writing and printing ink, &c. We shall be able to present a detailed description of the whole process in some future number. The inventor is a good chemist and the details of his experiments will show that he is eminently acquainted with that beautiful and useful science.

Scissors Grinder.

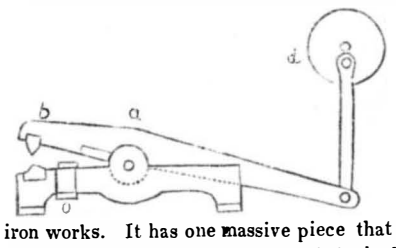
We have ofted pitied the fate of that useful class of Mechanics, who, with their grindstones, go about our streetrs wheeling their useful apparatus in the midst of dust and turmoil, and beneath a burning summer sun. But as fortune favors the brave, so has Yankee ingenuity come to the relief of the Knife Grinder. A Mr. Brown, an adept in his trade, has rigged upon his grinder cart a machine which is propelled by foot-clappers, worked by himself. This ingenious piece of mechanism was conceived and executed by Mr. Brown, who rides round the street in his "chair," and when he gets a job he still remains seated on his carriage, and has only to detach his clappers from the wagon-wheel, and connect them with his grind-stone, hold the knife or scissors on the aforesaid stone till he brings on a keen edge, and then again harness his team, and go to another scene of operation.

Cudbear Dye.

We perceive by the London Mechanics' Journal, that a Mr. G. Gordon, of Leith, has got a patent for the manufacture of Cudbear, to supersede Archil for dyeing puce colors, &c This is something singular, as Cudbear has been used for this purpose by practical men for years. The Patent Office must have been ignorant of this fact.

Shearing Machines.

The earliest machines of this class were scarcely more than a magnified copy of the bench shears, but made very much stronger, thus the accompanying sketch represents a sheering and squeezing tool used in some



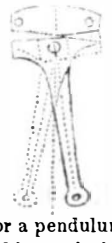
iron works. It has one massive piece that is fixed to the ground, and jointed to it is the lever, which carries at *a* a pair of shearing cutters situated exactly on two radii struck from the centre of motion; this machine has also two squeezers *b*, for moulding pieces of iron when red hot to the particular form of the dies. The longer end of the lever is united by a connecting rod to an eccentric stud in the disk *d*, which is made to revolve by the steam engine.

Some shears have been moved by means of an axis carrying two rollers, placed at the extremities of a diagram. The one roller acts on the radial part of the shear lever in the act

of cutting, and the curved part then allows the lever to descend by its own weight rapidly yet without a jerk, by the time the other roller comes into action for the succeeding stroke of the machine, which by this double eccentric makes two reciprocations for every revolution of the shaft.

It is more usual, however, to employ cams, and in this case the part of the cam which lifts the shear lever is usually spiral, so as to raise it with equal velocity; the curve of the back is immaterial, provided it forms a continuous line so as to prevent the lever descending with a jerk.

The figure below represents the double shears contrived for the Mint, the one part, shown also detached, presents two horizontal but discontinuous edges with the axis in the centre, this piece is fixed to a firm support; the other or the moving part somewhat resem-



bles the letter T or a pendulum, to the lower end of which and beneath the floor, is jointed a connecting rod, that unites the pendulum with en eccentric or crank driven by the engine. The machine is double, or cuts on either side, and has two pairs of retangular cutters or hardened steel, which may be shifted to bring the four edges of all of them successively into action.

Boiler makers have great use for powerful shears for cutting plate iron from 1-4 to ½, and sometimes 3-4 inch thick; and the next stage of their work is to punch the rivet holes by which the plates are attached. The two processes of shearing and punching are so far analogous in their requirements, that it is usual to unite the two processes in one machine; and as it sometimes happens the boiler maker's yard is at a distance from the general factory, it then becomes necessary to work the shears by hand with a winch handle, and which is effected by the introduction of only one wheel and pinion. The wheel is fixed on the cam shaft, the pinion on the same axis that carries the heavy fly-wheel employed to give the required momentum; this mode of working the shearing and punching engine is perfectly successful, but of course less economical than steam or water power, the agency of which the machine is also adapted to receive.

Lewis's Improved Locomotive.

We have examined a model locomotive, the invention of Dr. Lewis, of this city, and we have no hesitation in saying that it is a wonderful and beautiful invention, destined we think to produce a great revolution in the speed and safety of railroad travel, as it cannot be thrown off the rail by common causes, even although a section of fifteen feet of rail was removed from one side of the track. By it a larger boiler can be used, whereby a greater steam force can be exerted than by our ordinary locomotives, an important consideration, as we may truly limit locomotive speed only by the quantity of steam generated in a given time This is a principle in steam engineering, but subject to mechanical ingenuity in the harmony of the different parts of an engine and the economy, correct combination, and arrangement of the same.

Dr. Lewis's locomotive is of peculiar construction, the peculiarity of which consists in what is called the running part or wheels. It is built with eight wheels, for driving and four protection power wheels. The protection wheels are two thirds less in diameter than the driving wheels, and they have two rims, or flanges, like a pulley. These protection wheels are placed two before and two in the rear of the driving wheels Each wheel is fixed upon a separate axle, but are joined across by two double jointed axles.—Thus they are very flexible and accommodating to the rail in oscillation. They are also formed so as leap a beam or other obstruction that may be thrown across a track, keeping still their direct line of travel by a curious contrivance of springs and pilot posts, whereby the protection wheels can rise to a considerable height and the body of the locomotive be unswerved in the four and helping to guide the wheels in retaining their course on the track. By another mechanical arrangement the engineer can throw four or five tons from the driving wheels to the power wheels, and vice versa, giving the locomotive a wonderful advantage in ascending and descending grades of whatever elevation.

Improved Car Couplings.

Dr. Lewis has in conection with his locomotive, a most invaluable method of coupling the cars by iron chains running from the tender and coupling round the rear car, moving easy by anti-friction rollers. By this arrangement the cars can be brought so close to each other that the oscillating and surging of the different cars, (so great an evil in our present mode of coupling) is prevented and with no change in our common buffers. By this means, too, in turning curves, the cars are braced together equally on both sides of the curve, as the chain couplings accommodate themselves to any angle of inclination.—The couplings are screwed up tight by a shaft wheel, so that a whole train of cars are brought snug up to the tender, like one car, while the whole can be instantly uncoupled by the stoker, by a few turns of the coupling shaft wheel and all danger to passengers, at least by collisions, prevented. By this invention there is great steadiness, an increase of speed, with more safety than by our present system, and the wear of machinery and rails much lessened. A full and correct description cannot be expected without an engraving. We would, therefore, recommend a visit to the sanctum of the inventor, No. 87 Walker street, when our opinion will be more than corroberated by an examination, not only of the model, but by an exhibition of its operative qualities. At some future period we shall be able to present an engraving with a more full description.

Safety Boiler Feeder.

In public conveyances safety is comfort.—From numerous accidents, however, it may be said, that "we pluck the flower safety." In other words, public opinion becomes aroused to the necessity of adopting measures to prevent in future, evils that may have occurred in the past. Thus boiler explosions, caused by derangement in the supply of water, have been the means of much destruction of valuable life and property. To prevent these occurrences two things are required, viz. a water guage which indicates with perfect accuracy the height of the water in the boiler; the second a pump to afford a constant supply of water to the boiler when the boat is at rest as well as when in motion. The common gauge attached to boilers cannot always be depended upon; if there be a foam in the boiler its indication must be deceptive, and boilers foam most of the time. Experiment has proved ebullition to take place with liquids, even at ordinary temperatures, under a relief of pressure. Thus, water and ether boil under the exhausted receiver of an air pump. Every stroke of the piston relieves a boiler from some pressure, and therefore ebullition frequently destroys the intended effects of the gauge.—The ordinary pumps used to supply the boiler are attached to the working-beam, and continue in motion only while the boat is in motion. When the boat stops, though the water in the boiler continues to diminish in quantity by the generation of setam, the pump fails to supply the deficiency; portions of the boiler thus become exposed and intensely heated; when the boat starts the water is again injected by the pump, comes in contact with the hot metal, and, being instant converted into steam, often produces a pressure sufficient to cause an explosion. The steamer Bay State has a separate engine, which can be worked when the boat is at rest, and thus supply her boiler. A tube running from her boiler, first horizontally, then vertically, constitutes her gauge: in this the water rises to its level in the boiler, and by forcing down a perforated dasher attached to the lower extremity of a rod, with a splash it indicates the height of water in the boiler. Would it not be well to adopt the same plan in all the steamboats that navigate on our coast and on the Western waters.

Improvements in Fulling Cloth.

Mr. J. Faucon of Rouen, France, has taken out a patent for an invention which has for its object the substituting a combination of caustic potash water and tallow oil for the common soap used in fulling cloth. The caustic potash water and tallow oil may be mixed in the prnportions as follows:—100 lbs. potash water at 1.16 and 50 lbs. tallow oil; or 100 lbs. potash water at 1.20 and 60 lbs tallow oil; or 100 lbs. potash water at 1.24 and 72 lbs. of tallow oil; or 100 lbs. potash water at 1.27 and 80 lbs. tallow oil; or 100 lbs. potash water at 1.30 and 87 lbs. tallow oil. The quality of the material produced from 100 lbs. of potash water at 1.30 and 87 lbs. of tallow oil is far superior to that which is made with 100 lbs. of potash water at 1.16 and 50 lbs. of tallow oil, or any other of the above mentioned mixtures. Caustic potash water above 1.30 and under 1,16 can be used; and the quantity of tallow oil may be increased or diminished. For mixing the two ingrediants together, the potash water, in a cold state, is put into a barrel or tub, and the tallow oil being thrown in, is mixed therewith by stirring. When these two ingredients are thoroughly incorporated and amalgamated, the mixture is allowed to stand from twelve to eighteen hours afterward; it is then stirred again, if there should be any separation, and afterwards left for one or more days. This compound is to be used for fulling cloth, in the same manner that common soap is employed.

Novel Invention.

The Picayune publishes a letter from Vera Cruz, which speaks of a new invention, for exploding shells by means of electricity—the shell is fired with a wire attached to it, of sufficient length, which uncoils as the shell flies, and when at the exact spot required, the other end of the wire, which is retained at the gun, receives the electric shock, and the shell is instantly exploded, so as to create the greatest possible injury to the enemy. The difficulty, however, will be in determining when the shell has reached the exact point desired. It will require exceedingly sharp eyes for that purpose, and then if the wire should break, as would be most likely, the thing would go "away over yonder."

A Great Dam.

A dam is about to be built at Lawrence, Mass., which will be 900 feet long, 26 feet high and 25 feet wide, equal to 580,000 cubic feet. Allowing a cubic foot to weigh 167 lbs. the weight of the dam will be 97,895,000 lbs. or about 48,857 tons. Allowing a four horse team to draw 8 tons of stone per day from the quarry to the dam, it would require upwards of 6100 days, or nearly 20 years to draw the stone of which this structure is composed.

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NEW YORK, SEPTEMBER 11, 1847.

American Railroads.

There can possibly be no limits to the increase of American Railroads. With an increase of population, there must be an equal increase of travel and commerce, and consequently an equal demand for the means of transit. The population of the United States doubles every thirty years. We have now three thousand five hundred miles of railroad, and we venture to predict that in 1850 we shall have no less than six thousand miles of railroad We are confident of this from the great success that has attended Railroad investments during the past two years, especially on the great lines of communication. At the present moment, the Central Railroad of Michigan employs thousands of laborers, and on the New York and Erie Railroad, we are informed that there are more than three thousand employed. The greatest energy and enterprise is now displayed in the construction of these roads. The best T rail and the most approved locomotives are to be used, and no expense is to be spared to make them durable, safe and superior to any built in the United States. The great New York and Erie Road is to be the broad gauge. This is a wise policy. The broad gauge, so far as it has been compared and tested by its results, has maintained a decided superiority over the narrow There are sixty two miles of this road finished, and by next summer there will be one hundred and forty. When it is opened from our city to Lake Erie, we shall behold one of the most splendid works on our continent.—Huge iron horses will be seen speeding along at thirty or forty miles per hour, in comparison with which, our present engines will appear like Shetland ponies. The question may be asked, will this new road destroy the traffic of the Albany and Buffalo chain. We think not—all will have enough of business. The one will have Boston as an eastern point, the other New York, and there will always be an increasing demand upon the means to facilitate the carriage of passengers and freight to and from the great valley of the Mississippi. The enquiry has often been made, "will railroads yet supersede canals and river navigation?" We think that they will yet supersede canals, yea, they have already done so in a great measure, but they never can, we think, compete with river navigation. In the one case, rivers are the highways of nature, and canals and railroads are not, and at the present moment freight and passengers can be with profit transported by steamboat for one third of the amount they can by railroad.

There can be no donbt but that the price of railroad transport will yet be much decreased, and the only way this can be done, is by building good, solid tracks at first. Superficial Railroads that have been successful, owe such good fortune to some extraordinary circumstances. There is great wisdom now exhibited in building roads substantially, and we shall, no doubt, have an average speed of thirty miles per hour on most of our roads in the course of three years more. We therefore look forward with high hopes to the future railroad prospects, believing that railroads are now what Macadamised roads once were, viz. a test of national civilization.

Quality and Cheapness.

America has long been the chief market for English manufactures, and might yet be, if her manufacturers had studied their own interest by supplying us with articles of superiority, especially tools. It is assuredly a question, the discussion of which might, perhaps, not unprofitably exercise the ingenuity of political economists, how far in manufactures an individual has a right to deprave the quality of an article, to enable him to sell it at a price correspondingly low, and what on the whole, society gains or loses between a regulation which compulsorily maintains in the article a standard degree of goodness, thereby confining its use to such as can pay the regular price, and the state of things which presents the lowest possible terms to facilitate its universal acquisition. It remains to be developed, whether America will in a few years be able to manufacture its principal articles now in use, in sufficient quantities, not only for home consumption but exportation, and if the competition (not of superiority but cheapness,) will be carried on as it has begun in some descriptions of goods to the universal extent it has, we are sorry to say, in several European countries lately. At present the incentive to our mechanics should be the superiority of their goods over those imported and not merely cheapness. At present any mechanic considers a tool if it bears the stamp of an American manufacturer, a sufficient guarantee of its superiority, and why cannot we maintain that distinguished preference and go on from generation to generation improving in our course, till the name of America shall be as renowned in all parts of the world for scientific mechanics and artizans, as it now is for independence and enterprise? Or shall we, on the contrary, build gilded cas les, which will shine for a few short years and them fall uncared for and forgotten.

Electric Telegraph.

Amos Kendall is publishing a series of communications in the Washington Union, concerning Morse's telegraph. He maintains that Morse's patent embraces any and all combinations of machinery moved by electro-magnetism, "which may be used to imprint signals upon paper, or other material, or to produce sounds in any desired manner for the purpose of telegraphic communication."

Again, he says:

"House's patent only covers a mode of arriving at an end already patented to Morse, and secures nothing but the right to use House's instrument, after having obtained from Morse the privilege of using the electro-magnetic power to make marks or sounds for telegraphic purposes. The use of House's instrument, therefore, without having first obtained the right to use Morse's prior invention, is a direct infringement of Morse's patent."

In copying this statement it is not our purpose either to affirm or deny its correctness, but simply to show the extent of Morse's claim.

Money Spent in War.

"Give me," says a vigorous writer, "the money that has been spent in war, and I will purchase every foot of land upon the globe. I will clothe every man, woman, and child in an attire that kings and bueens would be proud of. I will build a school-house upon every hill side and in every valley over the whole habitable earth; I will supply that school-house with a competent teacher; I will build an academy in every town, and endow it; a college in every State, and fill it with able professors. I will crown every hill with a church consecrated to the promulgation of the gospel of peace; I will support in its pulpit an able preacher of righteousness, so that on every Sabbath morning the chime on one hill should answer to the chime on another around the earth's broad circumference, and the voice of prayer and the song of praise should ascend like a universal holocaust to Heaven,"

Beacon of the Capitol.

The Gilded Lantern and Lofty Mast were raised to their intended position above the dome of the Capitol last week. The mast was first seen projecting upwards about two o'clock, and in two hours, its lower extremity was safely placed in its socket The elevation of this lofty and beautiful mast, was accomplished handsomely under the direction of Mr. Crutchett, Captain Easby with a number of his skilful and hardy shipwrights assisting in the operation. The gilded lantern presents a very splendid appearance in the rays of the sun. The mast was raised without accident of any kind or personal injury to any of the workmen.

The Boston Iron Co. have such a demand for their railroad iron, that they are obliged to keep their works in operation day and night.

Railroad Wheels and Axles.

From a number of accidents on Railroads, caused by the breaking of axles and the slipping of wheels off the rails, much attention has been directed to remedy these evils. It is not long since the Birmingham Society of Engineers directed its members to experiment particularly upon a superior mode of combining the car wheels "so that curves of less diameter than those on British Railroads might be turned with more ease than their present constructed cars would allow: also to combine safety with every improvement." We do not know what experiments have been made there, and therefore are ignorant of the results. But our engineers paying attention to the subject, although they have not formed associations for practical information and experimental knowledge, associations which we would sincerely desire to see instituted throughout the length and breadth of the land. We have lately seen two improvements relative to the coupling of the wheels and axles, which appear to combine greater strength along with flexibility, a grand desideratum.—One of the improvements to which we have alluded, consists in having a coupling box on the axle, or rather two axles joined by a kind of socket coupling box, which enables each wheel to be moved almost independent of the other. Another improvement is, a separate axle for every wheel, the axle tapering from the wheel to have the diameter at the other end. William Meschett, Pattern Maker, 5th street, New York, is the author of these inventions, and these hints may be of some use to those who can make practical experiments. We could not anticipate any advantage from the single wheeled axle, but the coupling axle has something to recommend it.

The Turpentine Trade.

Camphene, or distilled turpentine, has now in a great measure superseded the use of whale oil for domestic illumination in many cities and villages It gives a more brilliant light than oil, and although it is more dangerous yet it is preferred for economy. Turpentine is principally manufactured in the Carolinas and Georgia, out of the pine trees which grow on the sandy tracts of those States.

In North Carolina about 800,000 barrels of turpentine are annually made. Not more than 200,000 barrels, if that, were shipped to New York and other ports, the past year, in its crude state, the largest portion of the whole being distilled in the State. The estimated value to the makers is about $1,700,000 annually, and may be $2,000,000 Abut 4000 or 5000 laborers are engaged in making it, and perhaps as many more of human beings are supported mainly from the proceeds of its first sale. In that State there are now in operation about 150 stills, which at an average cost of $1500 with fixtures, shows that there is an expenditure of $225,000 to begin with in the distilling of spirits of turpentine. This number of stills to have steady work, would require 900,000 barrels annually. The cost of distilling is very great, and when we reckon the cost of transportation, the profits of distillers, of ship owners, commission merchants, and the venders of the article abroad, it will be seen that the capital and labor employed is not only immense, but the numbers who are supported by the manufacture and sale of the article is astonishing Perhaps there is not one produced in this country by the same number of hands that contributes so much to the commerce and prosperity of the Union as the article of Turpentine.

American Chalk.

It has been supposed by some geologists, that chalk has never been found in America. Recently, however, a very interesting specimen of real chalk, enclosing flint, was found in Georgia by Dr. Feuchtwanger, of New York, and he states that the cretoceous system extends from New Jersey to Florida, and that chalk may yet be obtained, in any quantity, within our own territory.

Quick Work.

A message was received at New York on Saturday, over the telegraph wires, from Montreal, which was delivered, answered, and receipt acknowled in the short space of thirty minutes. It came by the way of Toronto and Buffalo.

Wrought Iron for Crank Axles.

The experiment for wrought iron in crank axles for locomotives, which has been tried on the Baltimore and Susquehannah Railroad has failed to realize expectations. The locomotive Sampson, had one broken lately, and the fracture of the wrought axle plainly showed the defects to which wrought iron is unavoidably subject when large masses are forged into intricate shapes The interior presented a spongy structure, surrounded with coarse crystalline granulations, gradually becoming finer towards the surface, evidently showing that its weakness was owing to injuries sustained in the process of forging; and these imperfections are of such a nature that their existence could in no way be ascertained before the breaking of the axle. In forming this part of the engine of cast iron, the mould is set upright, and the melted metal is made to flow upwards through it by its own hydraulic pressure, carrying all the impurities on its surface, and rising some two or three feet above the top of the mould, so as to produce a sufficient pressure to cause a perfect solidification of the mass of metal intended for the axle. By this means the perfection of the internal structure is rendered much more certain than is possible in a forged axle. But one cast iron axle has been broken on the above railroad

A Phenomenon.

The French *Courier* says that Mr. Glatz one of its subscribers in this City, has a child which offers a singular example of the caprices of nature. It is hardly twenty-two months old, and is thirty-nine inches in height Recently it grew five inches in three days, and then after twelve days' intermission it grew three inches more in a week As the *Courier* is told by M. Legrand, the French physician who attends it, it is the most curious phenomenon ever observed: the most rapid growth known before being three inches in eight days. We add with regret that this abnormal development has exhausted the strength of the child, which is reduced to such a state that the circulation of the blood can be seen in its veins. It lives only by the nursing it receives, and they despair of raising it.

The Telegraph in Canada.

Works are in progress for establishing the Electric Telegraph from Montreal to Quebec The Quebec Gazette remarks that the posts for it are already placed along St Paul street in that city Works are also in progress for extending the Telegraph from Quebec to Halifax, and the posts are already up in the Parish below Beaumont.

Sun Flowers.

Mr. Beauchamp, of Skaneateles, has a sun flower on his farm with the astonishing number of 85 heads on it, and several with 70 heads. Sun flower oil has now become a business of no little consequence, and we think that it might be profitably applied to the making of gas for villages and farm houses.

Peoria Bridge.

A bridge is to be built over the Illinois river, at Peoria. The stock has been subscribed, and contracts made for the commencement of the work on the first of this month, and its completion on the 1st of October, 1848.

To New Subscribers.

Those subscribing to the Scientific American will be furnished, if desired, with all the back numbers of the present volume. Bound together at the end of the year, they will form a handsome and valuable work.

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Extraordinary Features in the Geology of Kerguelen Island.

On the south side of the harbor is the extraordinary rock noticed by Cook, which forms so conspicuous an object in his accurate drawing of this place. It is a huge mass of basalt much more recent than the rock on which it rests, and through which it seems to have burst in a semi-fluid state. It is upwards of five hundred feet thick, and rests upon the older rock at an elevation of six hundred feet above the level of the sea; and it was between these rocks of different ages that the fossil trees were chiefly found, and one exceeding seven feet in circumference was dug out and sent to England. Some of the pieces appeared so recent that it was necessary to take it in your hand to be convinced of its fossil state, and it is most curious to find it in every stage, from that of charcoal lighting and burning freely when put in the fire, to so high a degree of silicification as to scratch glass. A bed of shale, several feet in thickness, which was found overlaying some of the fossil trees had probably prevented their carbonization when the fluid lava poured over them. A still more extraordinary feature in the geology of this island is the numerous seams of coal, varying in thickness from a few inches to four feet, which we found embedded in the trap rock.

Singular Fact in Natural History.

Between four and five months ago, Mr. Robert Reid, baron officer of the Honorable M. Stewart, Corsbie, Scotland, having two hives of bees, the one pretty strong, and the other weak, took it into his head to make an experiment with the weakest, as it was not worth killing. He shut up the mouth of the "skep," covering it with straw, and afterwards covering the entire hive with earth, in the same manner as a pit of potatoes. The strong hive, during winter, took for their sustenance upwards of ten pounds of sugar. On the 13th current the covered hive was dug up, in presence of Messrs. John Stewart, writer, John Mitchell, gardener, and others, when, wonderful to behold, the formerly weak hive was found in a strong and healthy state. The "skep" was lifted off the board, and there was not above a dozen dead bees in the lot; and it was truly pleasing to see them, when aroused from their dormant state, flapping their wings and buzzing about, after being shut up from light and air for four months and thirteen days. About two hours after being opened, they were out in swarms busily gathering wax.

Extraordinary Courage.

On the 3d ult., a youth about 18 years of age, son of a gentleman well known in Manchester, was proeeeding along the Newbury road, when he was either met or overtaken by a dog which bit the little finger of his left hand, he immediately made after the dog, which bore every appearance of being in a rabid state, and killed it; then remembering the fatal conseqences from the bite of a mad dog, and thinking he might have imbibed the hydrophobic poison, he deliberately took out a pen knife and cut off the finger by the first joint. After this he went to the office without taking any farther notice of the matter, and went about his usual business without giving intimation to any one what had happened. At last, however, a quantity of blood which oozed from the wound led to the detection, whence he was sent to Mr. Jordon surgeon, of Bridge street, who on examining the extremity, found it necessary to amputate the finger at the second joint. This the youth bore with the same indifference as he did the pain which he must have caused himself whilst practising the surgical art upon his own person; the operator in the latter case declaring he had never before met with a patient who showed such great indifference to pain. After the operation was over he went to business as usual.

The Hon. Edward Bates, of Missouri, the President of the Chicago Convention, said when he emigrated, 1812, to the French village of huts called St. Louis, which has now 50,000 inhabitants, he was obliged to hire a guard against hostile savages, to accompany him across the unbroken wilderness, which is now the State of Illinois, with a civilized population of 600,000 freemen.

Coating Iron and Zinc with Copper, without Cyanuret or Potassium.

The great advantages which would arise from the perfecting a plan, whereby the easily oxidisable metals, such as iron and zinc, could be coated with copper at a cheap rate, induced Messrs. Elsner and Philip, of Berlin, to undertake a series of experiments, to ascertain if such could not be effected more economically than by employing the cyanuret of potassium, and in which they have been successful. For coating iron the article must be well cleaned in rain or soft water, and rubbed before immersing it in the solution, which may be either chloride of potassium, chloride of sodium, with a little caustic ammonia added, or tartrate of potash with a small portion of carbonate of potash. At the extremity of the wire in connection with the copper, or negative pole of the battery, is fixed a thin flattened copper plate only partial. The liquid should be kept at a temperature of from 15° to 20° centigrade, and the success of the operation depends greatly on the strength and uniformity of the galvanic current. When the chlorides are employed, the coating is of a dark natural copper color; and with tartrate of potash, it assumes a red tinge, similar to the red oxide of copper; when sufficiently covered, the article is rubbed in saw-dust, and exposed to a current of warm air to dry—when they will take a fine polish, and resist all atmospheric influence. In coating zinc with copper, the same general principles will apply as for iron—only observing that in proportion to the size of the article, the galvanic current must be less powerful for zinc. The surface must be perfectly smooth, and for this reason it is well to rub them thoroughly with fine sand, and polish with a brush. Tartrate of potash is the best existing liquid for coating zinc. By very simple means, large articles in iron and zinc may be coated with copper by the above cheap chemical solutions, which could not, at any former period, be effected from the high-price of the cyanuret of potassium.

Hieroglyphical Mica Plates from the Mounds.

You have probably observed says a letter writer, a paragraph going the rounds of the newspapers, credited to a journal published at Lower Sandusky, in this State, to the effect that a number of inscribed plates of mica were recently discovered, in excavating an ancient mound near that place. These plates are represented in the account as oval in shape measuring seven by ten inches, and "covered with *hieroglyphics* of different and beautiful colors, betokening a more advanced and entirely different state of the arts than has heretofore been discovered in the remains of the Indian tribes." As this announcement has created some degree of interest, and elicited some inquiries, it will not be out of place to observe that one of the plates has been placed in our hands, through the kindness of a friend residing at the point mentioned. The form of the plates and their size are correctly represented, but the hieroglyphics are nothing more or less than *discolorations*, caused either by the infiltration of a mineral solution between the laminæ, or by its presence at the period of crystallization.

The material is very well known as *graphic* or *hieroglyphic mica*, a deposit of which occurs upon the Schuylkill, not far above Philadelphia. Although the discoloration, following the planes of crystalization, falls in places into right lines, it seems utterly unaccountable that they were mistaken for the work of man. This is another illustration of the very loose manner in which facts relating to our antiquities have been placed before the world; a looseness, unfortunately, not entirely peculiar to newspaper statements. The plates are very pretty specimens of the mineral, and are each perforated, near one of the ends, with a small hole. They were undoubtedly used for the purpose of ornament. Mica is common in the mounds, sometimes cut into the form of scrolls and other ornamental plates. I have taken a bushel of the sheets from a single mound.—*Sillman's Journal July.*

An Artesian Well.

An Artesian Well is in progress in Charleston, S. C. under contract. It has now been carried to the depth of two hundred feet.

The Lawrence Scientific School.

The following vote was passed by the Corporation of the University at Cambridge on Commencement day at their meeting:

"Whereas, The Hon. Abbott Lawrence of Boston, has presented the sum of fifty thousand dollars to the President and Fellows of Harvard College, as an endowment of the Scientific School in this University, and for the foundation of Professorships of Geology and Engineering in the same, it is therefore unanimously

Voted, By the President and Fellows, in token of their gratitude for this munificent donation, and in perpetual commemoration of the same, that the Scientific School be henceforth known and designated as the 'Lawrence Scientific School, in the University of Cambridge.'"

The building on Mr. Lawrence's foundation are already in progress of construction. A temporary laboratary has been prepared and special students in *Chemistry* will be forthwith received by Professor Horsford. The other departments of the school will not go into operation, till the appointment of the Professors of Geology and Engineering.

Sadness.

There is a mysterious feeling that frequently passes like a cloud over the spirit. It comes upon the soul in the busy bustle of life, in the social circle, in the calm and silent retreat of solitude. Its power is alike supreme over the weak and iron-hearted. At one time it is cased by the flitting of a single thought across the mind. Again a sound will come booming across the ocean of memory, gloomy and solemn as the death knell, overshadowing all the bright hopes and sunny feelings of the heart. Who can describe it, and yet who has not felt its bewildering influence! Still, it is a delicious sort of sorrow; and, like a cloud dimming the sunshine of the river, although casting a momentary shade of gloom, it enhances the beauty of returning brightness.

The North America Bank Vault.

The fire-proof which is now being built in the new banking house of the North America Bank, in Chesnut street, Philadelphia, attracts general attention, and the precautions which are taken to preserve its contents from the ravages of fire and to defy attempts of robbers are peculiar. It occupies a space of about fifteen feet square, and will, in all, be two stories high. Solid walls of brick work, twelve inches thick, are building to enclose the fireproof, and in the centre of these walls are ranged bars of iron four inches apart, placed in a perpendicular position, so that an attempt to break though any portion of the wall would be an almost impossible achievement; there are also large plates of iron built in the wall, to render a breach still more difficult. In order to exclude the heat from the interior, in case of fire, the actual walls of the vault are to be constructed within those already described, so as to allow a space of about three inches between them for the free circulation of air all around the enclosure intended to contain the valuables.

Rust.

Professor Faraday, in speaking of rust, says the oxide found on iron forms upon it little spots or tumuli. It is not an investing varnish, but the process goes on through the pores of the rust, especially if the iron be placed in a damp atmosphere. But for this difficulty, iron would be a more useful metal if possible than it is now. The discovery, therefore, of a method to prevent rust, by the process of galvanizing iron, will double if not treble the demand for that metal, and it will come into use in a thousand forms supposed hitherto impossible.

Every iron establishment in the United States should avail itself of this advantage. Galvanized iron should be as much an article of use as iron in any other form, and it would supersede, in many ways, copper, lead, and tin. The iron work on every new building in the Union, if galvanized, would save large sums to owners in the item of painting alone; but, when we look at the expenditure in roofing, bolts, bars, spikes, sheathing, wire, nails, vault doors, window shutters, the saving effected in a year would amount to millions. Rust is a sad encroacher on metallic strength. It may be now successfully resisted.

RAIL ROADS.

Stonington Railroad.

A new arrangement of the Stonington Railroad accommodation train commenced on Thursday last, when a morning and evening train was established each way, leaving Providence at 8 1-4 o'clock, A.M. and 4 P.M.; leaving Stonington at 6 1-2 A.M. and 3 1-2 P.M.

Gloucester Massachusetts Branch Rail-Road.

During the twenty days which this road has been opened to Manchester, upwards of 4,000 passengers have been safely transported over the same. This is truly a great beginning and argues almost unexampled success for the road. When, under complete equipment it will be opened to Gloucester—an event expected to take place in all the month of October next.

New York and New Haven Railroad.

The New Haven Journal of Saturday week, says, "the Engineers are now running their line across the harbor, including the Canal Basin, south of Union street, with a view to the permanent location of the route. More than 1500 men are now occupied between the western line of the city and New York. The whole route is under contract, and the work is progressing with great activity. We understand that the Directors of the road meet in New York to day to fix definitely where the route shall terminate in New Haven, in connection with the various points proposed."

Cheshire Railroad.

The Keene (N.H.) Sentinal says the bonds issued by this road have all been taken at par. The road will be opened to Fitzwilliam early in September and to Keene before the new year commences.

Manchester and Lawrence Railroad.

We learn from the Manchester American that the Stock Books of the Manchester and Lawrence Railroad were closed on Friday. More than two millions of dollars have been subscribed, which is nearly four times as much as is needed to construct the road.

We see by the southern papers that the subject of a Rail Road, from Cincinnati to St Louis is being agitated.

It is confidently anticipated that all the stock in the Chicago and Galena Rail Road will be taken this fall, and the work commenced before the setting in of cold weather.

A Rail Road from Fredericksburgh to Gordonsville, Va., 40 miles, is to be built.

The Mexican Gulf Railway.

This railroad is now completed to Lake Borgne, twenty-eight mils from New Orleans. Trips to the lake by this route were quite the order of the day.

Railway across the Isthmus of Panama.

M. Klein, who was sent to Bogota to treat with the Government of New Granada for the establishment of a Railway across the Isthmus of Panama, has returned to France. He has completely succeeded in his mission, having obtained most advantageous conditions for the company he represented. The works will shortly be commenced.

Railways in Peru.

Advices from Lima, received in London, state that the President of Peru has accepted a proposal of Mr. William Wheelwright to construct a railway, (the first in that country) between Lima and Callao. It will be about six miles in length, cheaply constructed, with one set of rails, and, running from Lima to the water's edge, it will receive as regards both passengers and goods, almost the entire traffic of the republic.

An Honor to His Mother.

"John," enquired a dominie of a hopeful pupil, "what is a nailer!" "A man who makes nails," said John. "Very good. What is a tailor?" "One who makes tails" "O, you stupid fellow," said the dominie, biting his lips, "a man who makes tails?" Yes, master," returned John, "if the tailor did not put tails to the coats he made, they would be all *jackets!*" "Sit down, John, you're an honor to your maternal parent."

An Irish footman, who got a situation at the west end of London on entering a room where there was a vase with golden fish exclaimed, "Well, this is the first time I ever saw red herrings alive!"

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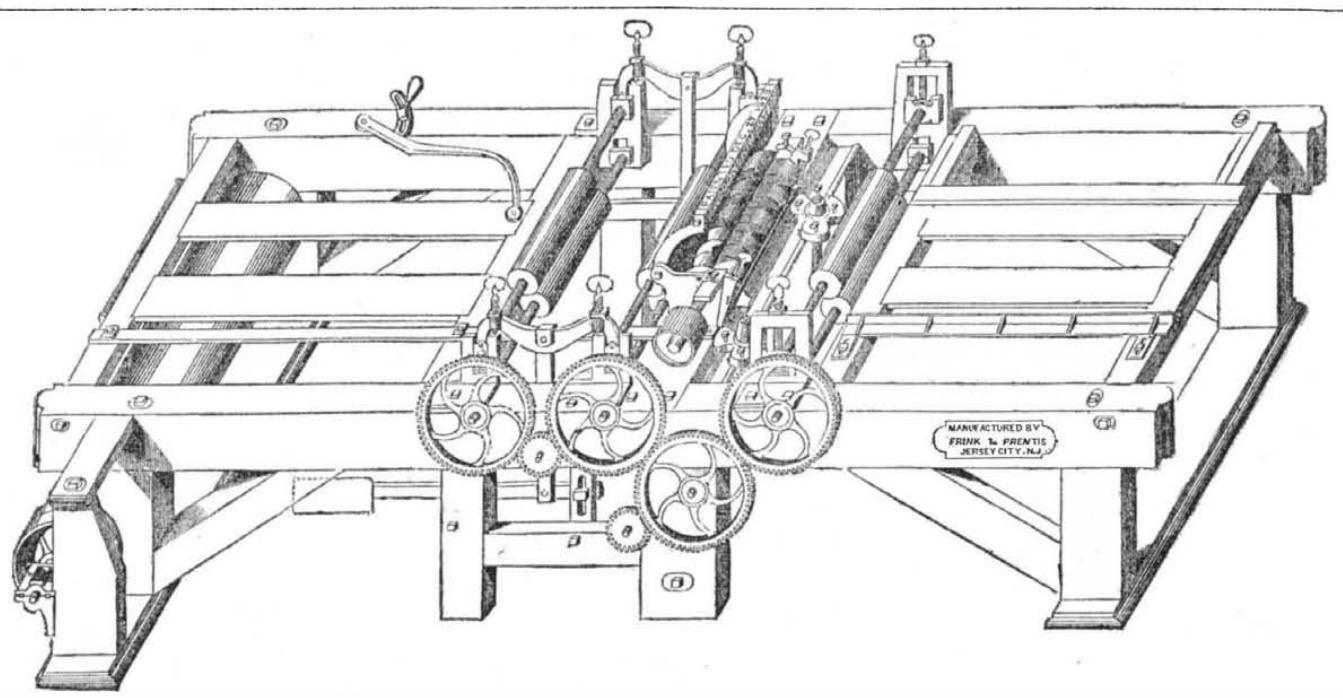

WOODWORTH'S PATENT PLANEING MACHINE.

☞ THE SUBSCRIBERS would hereby give notice, that they have the right to manufacture the Woodworth Patent Planeing Machine. Their Manufactory is at Jersey City, on Green street, near Selah Hill's Floating Dry Dock. Persons desirous of purchasing Machines would find it for their interest to call and examine the impr ovements made by us in the construction of the article. We have also the right of using said Machines in Jersey City and the County of Hudson, which gives persons an opportunity of seeing the article in operation. Any information respecting the improvements, or otherwise, will be cheerfully given by

JERSEY CITY, September 9, 1847. **FRINK & PRENTIS, Jersey City.**

TO CORRESPONDENTS.

"R. S. C. of P."—Use some bismuth in the solder for the organ pipes, it will fuse easier than the pipes.

"J. K. of Mass."—Your model has been received and the necessary papers shall be made out with the usual correctness and despatch.

"J. A. T. of Ala."—We shall endeavor to give you full and correct information regarding the price, &c. of the engine you want — The artificial water power is an Italian invention, and we think it too highly magnified.— Its principle and mode of construction has not yet come to hand, but we shall in all likelihood soon get it, as our correspondence with Europe on scientific matters is very extensive.

"J. & B. A. of N. Y."—We have frequently asked the very same questions of practical men, and have never as yet got satisfactory answers. If millwrights and engineers do not experiment they have none to blame but themselves. They have the best means of finding out the size, power and all about the reaction wheel. Timby's, we believe, is after the same plan as Whitelaw & Stirrat's, which ranks nearly in effect to first class wheels. We are endeavoring to collect facts from every quarter upon this subject, so that we may be able at some future period to present an article replete with experience.

"A. M. of Ohio."—The 44th No. of Vol. 1, weare unable to furnish you; the balance we have sent.

"R. R. W. of Mobile, Ala."—The first volume of the "Scientific American," cannot be had at any price. The present volume, which expires in one week, can be had for $2 in sheets, or $2,75 neatly bound.

"W S. of R. I."—We shall give your communication due attention. So far as we have had time to examine it, we have been favorably impressed with its value. Your ideas about the great storehouses of power, wind and water, are the same which we have held for years.

"D. K. of N. Y."—The gas apparatus in all likelihood, is upon the same principle as the one invented by you, but a patent has been secured for it, and there is one apparatus put up in Philadelphia. Do not upon that account, however, give up your experiments, for there may be a great difference in some essential parts of the respective inventions.

"W. B. C. of N. H."—Dr. Clowes is dead and the work on Tachimathy, that he contemplated publishing, has never been issued. Platina costs about one dollar a pennyweight.— We have no different numbers of Volume 1, from those we send, consequently we forward a valuable book, as an equivalent for the balance of the money you last sent. The water wheel referred to, is said to be propelled with a as little water as any other in use, but the quantity and velocity for power and speed, are not known to us. Your receipts are very acceptable. Practical knowledge is the only true science.

"E. B. of N. Y."—We are sorry that the wrong county was inserted by mistake. We have sent you the legal proceedings in the case of Z. Parker in relation to the reaction wheel. We sent the pamphlet within two hours after getting your letter, and by this time you will have a knowledge of the case as decided in chancery.

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A few sets of 25 Nos. each of Vol. 1, Scientific American, can be had at this office, price 50 cents. The complete sets of the last half of Vol. 1. have all been disposed of at the subscription price, and the numbers advertised above are not consecutive, but in fine order

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FIFTH EXHIBITION
OF THE
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For the encouragemenl of Manufactures and the Mechanic Arts, will take place at
FANEUIL AND QUINCY HALLS,
In the City of Boston.

Commencing on Wednesday, September 15th, of the present year.

The Government of the Association being vested with full powers to make all necessary arrangements, announce our Fifth Exhibition in full confidence that the various and important improvements in every department of Mechanic and Manufacturing industry to which the inventive genius of our countrymen is constantly giving birth, cannot fail to render this Exhibition more valuable, interesting and beneficial than either of its predecessors.

We therefore respectfully invite and solicit mechanics, manufacturers, and artists throughout the Union, to contribute specimens in every department of labor or skill; articles of wood, stone, metal, or any other material. The products of the loom in silk, cotton, wool, hemp, flax or hair; the creation of female industry and taste; and in fine any production, made of whatever material, which can in any way minister to the comfort or improvement of society.

And we hereby offer a premium of One Hundred and Fifty Dollars to the inventor of such machine, implement or scientific discovery, as shall be deemed by the Judges most important to the well being of mankind. Also, a premium of One Hundred Dollars for such machine, &c, as shall be considered SECOND in importance; and one of Fifty Dollars for that which shall stand THIRD in this respect. It being understood that such machine or implement, and, if practicable, such scientific discovery, shall form part of the present exhibition.

MEDALS (of gold or silver) or honorary Diplomas, will be awarded, as the articles exhibited may deserve; and the managers pledge themselves that the strictest impartiality shall be observed in their distribution.

Articles, to insure a conspicuous place in the exhibition, should be sent in season, that they may be registered by the Superintendent, at Quincy Hall on or before Saturday, Sept. 11th.

The Freight of all articles, machinery, &c. which may be sent for the exhibition over the various railroads, connecting with the city, will, if such articles, &c., are accepted and actually exhibited, be refunded by the Association.

All who may wish to present machines, models or goods for premium or exhibition, are requested to address Mr. JOHN KUHN, Secretary of the Association, City Building, 22 Court Square, Boston, (post paid,) which will meet with immediate attention.— The Secretary will also furnish, on application, gratis, copies of our GENERAL CIRCULAR, containing the Rules and Regulations of the exhibition.

By Order of the Government,
s11 2t GEORGE G. SMITH, President.

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Teeth made of Stone.

Stone artificial teeth, with the exception of the material with which they are colored, are composed entirely of silex, the generic name of which is quartz, or feld spar. Quartz, a clear white stone, is found abundant in this State. Quartz and spar are both very firm and durable, so hard as even to scratch glass and blunt the edge of the hardest file.

These two stones are first calcined by being exposed to a red heat, then suddenly immersed in cold water, which renders them brittle and easy to pulverize : then every impurity is rejected, and they are ground separately in a quartz or feld spar mortar to an impalpable powder, after which they are mixed together in proportion of about five parts feld spar to one of quartz The coloring matter is then added and thoroughly ground, which may be so varied in quality as to give an endless variety of tints and shades.

A great number of materials have been used for coloring, but at present there is little used beside platina, tetanium, cobalt and uranium. Platina gives the teeth a dark blue tinge ; tetantium, yellow; uranium, orange yellow ; cobalt, a delicate sky blue, and a lively and watery transparency. Gold is used for coloring artificial gums, which color is easily varied from a pale to a deep red.

These materials when thoroughly ground, mixed and colored, make a mass resembling very fine clay. When in this state it is moistened and moulded in single teeth, or carved in blocks, in which state they are very brittle, and must be handled with great care, or they are easily broken. After this they are placed in a furnace, with a fire draught of at least 40 feet; a fire is made of the hardest anthracite coal and a heat, raised it is said, to twenty-one thousand degrees. This heat melts the spar which flows over the teeth and gives them a beautiful polished and smooth finish. Quartz melts at a much higher degree of heat than spar, and serves to hold the teeth in form, without which they would melt into globes. After they are properly fiused they are annealed and made very tough by a very slow process of cooling off, which takes from six to ten hours in the annealing oven.

Teeth made by this process are beautiful, strong and durable. And from the hardness of the materials of which they are composed and the intense heat to which they are subjected for fusion, they are fully fortified against the tion of any agent in the mouth, to which ey can be subjected.

Soldering.

Soldering is the process of uniting the surfaces of metals, by the intervention of a more fusible metal, which being melted on each surface, seves, partly by chemical attraction, and partly by cohesive force, to bind them together. The metals thus united may be either the same or dissimilar; but the uniting metal must always have an affinity for both. Solders must be, therefore, selected in reference to their appropriate metals Thus tin plates are soldered with an alloy consisting of from 1 to 2 parts of tin with one of lead; pewter is soldered with a more fusible alloy, containing a certain proportion of bismuth, added to the lead and tin ; iron, copper and brass, are soldered with spelter, an alloy of zinc and copper, in nearly equal parts ; silver, sometimes with pure tin, but generally with silver-solder, an alloy consisting of 5 parts of silver, 6 of brass and 2 of zinc ; zine and lead, with an alloy of from 1 to 2 parts of lead with 1 of tin; platinum, with fine gold ; gold, with an alloy of silver and gold, or of copper and gold, &c.

In all soldering processes, the following conditions must be observed : 1, the surfaces to be united must be entirely free from oxyde, bright, smooth and level. 2, the contact of air must be excluded during the soldering, because it is apt to oxydize one or other of the surfaces, and thus to prevent the formation of an alloy at the points of union. The exclusion of air is effected in various ways. The locksmith encases in loam the objects of iron or brass, that he wishes to subject to a soldering heat ; the silversmith and brazier mix their respective solders with moistened borax powder; the coppersmith and tinman apply sal ammoniac, rosin, or both, to the cleaned metallic surfaces, before using the soldering iron to fuse them together with the tin alloy. The The strong solder of the coppersmith consists of 8 parts of brass and one of zinc; the latter being added to the former, previously brought into a state of fusion. The crucible must be immediately covered up for two minutes till the combination be completed. The melted alloy is to be then poured out upon a bundle of twigs held over a tub of water, into which it falls in granulations. An alloy of 3 parts of copper and 1 of zinc forms a still stronger solder for the coppersmiths. When several parts are to be soldered successively upon the same piece, the more fusible alloys, containing more zinc, should be used first. A softer sloder for coppersmiths is made with 6 parts of brass, 1 of tin and 1 of zinc ; the tin being first added to the melted brass, then the zinc, and the whole well incorporated by repeated stirring.

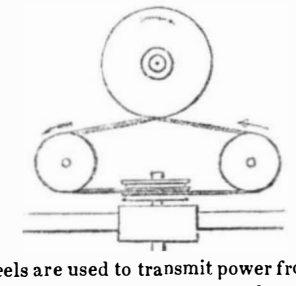
The edges of sheet lead for sulphuric acid chambers, and its concentration pans, are joined together by melted lead itself, because any solder containing tin would soon be corroded. With this view, the two edges being placed in contact, are flattened down into a long wooden groove, and secured in their situation by a few brass pins driven into the wood. The surfaces are next brightened by a triangular scraper, rubbed over with candle grease, and then covered with a stream of hot melted lead. The riband of lead thus applied is finally equalized by being brought into partial fusion with the plumber's conical iron heated to redness: the contact of air being prevented by sprinkling rosin over the surface. The sheets of lead are thus "burned" together, in the language of the workmen.

Curious Work of Art.

Cicero, according to Pliny's report, saw the whole Illiad of Homer written in so fine a character that it could be contained in a nut shell. Ælian speaks of one Myrmecides, a Milesian, and of Calicrates, a Lacedæmonian, the first of whom made an ivory chariot so diminutive and delicately framed that a fly with its wings could at the same time cover it and a little ivory ship of the same dimensions. The second formed ants and other little animals of ivory, which were so extremely minute that their component parts were scarcely to be distinguished with the naked eye. He states, also in the same place, that one of these artists wrote a distitch in golden letters which he enclosed in a rind of a grain of corn.

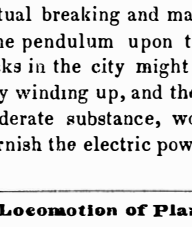
MECHANICAL MOVEMENTS.

Variations of Speed.



Wheels are used to transmit power from one point to another. Toothed wheeels working into one another, do not alter the effect of power, only so much as is lost by friction Wheels of different sizes working into each other communicate power or transfer speed. Belts are also used to transfer power from one point to another and the wheels upon which they work are usually called pulleys or drums. The above cut represents the transmission of not only, power by the belt, but exhibits a transfer of circular motion from pulleys spinning round horizontally, to a pulley and shaft spinning round vertically. Belts have the exact properties of the toothed wheels. If the pulley on the main shaft be double or triple the diameter of the pulley at the point of power transmission, then the small pulley or pulleys perform two or three revolutions for one revolution of the power pulley, or vice versa.—The study and knowledge of changing motion by machinery, and also the regulation of speed and a correct knowledge of what speed is required in all kinds of machinery for different purposes, presents a wide field for mechanical study and no one man can fully master all the intricate knowledge of mechanics and machinery. It is one thing to describe machinery, and another to go into a mill or factory and put it up ; there are some persons who can do both, but is a singular truth that there are not many. This one study is enough to absorb all thought.

Dead Beat Escapement.



The pendulum is the means by which power is applied to move clock works, and a coiled wire of steel is used to move chronometers. If a pendulum be attached to the axle of the pallet and set swinging, one notch or tooth of the wheel will be disengaged from the arms of the pallet by every stroke of the pendulum.

The whole working of a clock is effected by weight. The weights or cords that are wound round the axles of the wheels seek the centre of gravity and the pallet represented in the simple cut above allows those weights to reach the centre of gravity, in a given time, 24 or 192 hours. This cut explains the radical principle of clock motion, taking in connexion the ~~natural law which governs~~ the motion of the pendulum. If there are thirty teeth in the escapement wheel, it will make one revolution during 60 vibrations of the pendulum, and so on from seconds to minutes, minutes to hours, hours to days, days to weeks, and weeks to years, time is measured by a few weights, a few wheels, a pendulum or a steel spring

Electricity.

The great difficulty which had, until recently, been experienced in the mode of working clocks by electricity, was the difficulty of mantaining a continued current as the motive power. The inventor of the electric clock, states that he effected the continuity of the current by sinking in the ground two plates, one of copper and the other of zinc, at a distance from each other, to each of which was attached a wire communicating with the axis of the pendulum ; and the electric fluid being attracted through the soil from one plate to the other, the current is thus kept up. By the introduction of a non-conductor, a piece of agate, upon which, on every motion of the pendulum, the axis is forced, the current is broken, and re-attached by means of magnets. Thus the working of the clock is carried on by a perpetual breaking and making of power. By one pendulum upon this principle, all the clocks in the city might be kept going without any winding up, and the metal plates if of a moderate substance, would be sufficient to furnish the electric power for a whole century.

Locomotion of Plants.

If a hollow ball be filled with gas lighter than air, it will rise and float away. This fact is beautifully carried out by nature. The farina, or impregnated dust of plants, are little balls extremely thin and filled with light gas. They are blown off from the main plant, and by falling upon the female plant, impregnates it. Nature has so arranged it, that the unctious matter, which causes the impregnating parts of the plants to attach to others, never occur at precisely the same time in the male and female plants. Thus if the farina from the male plant hit the male, it does not adhere; but if it hit the female it does attach; the balls burst, for they are fastened and take effect. This impregnation often takes place many yards distant. In raising Indian corn, a single hill of red corn will be scattered a long distance through the whole.

Iron and Steel.

Dr. Ure bears witness to a very curious and important power of the voltaic current, in facilitating the rapid conversion of soft iron, exposed for a few hours in contact with coke, to a moderate red heat, into *steel;* which is further attested by the proprietor and head blacksmith of Manning's Foundry, Blackwall. They testify that they saw Mr. Wall put into a crucible a bar of iron, 1 inch broad by 1-4 inch on the edge and two feet long, "and in four hours it was taken out perfect *blistered steel.*" A small voltaic battery was used, and the parties express their joint opinion "that no iron could be converted into steel in so short a time by the mere application of heat and carbonaceous matter, as is generally used in that process."

To Preserve Peaches

Clean your peaches by pouring hot water on them and afterwards wiping them with a coarse cloth; put them into glass or earthern jars, cork them up and fasten the corks with wire or strong twine; then place the jars in a kettle of hot water until the atmospheric air is expelled from the jars; after which seal them up tight with wax. Peaches prepared in this way retain their original flavor and are equally as delicious, when cooked in the ordinary manner, six months or a year after having been put up, as if just taken from the trees.

The Spider's Web

When the spider's web and the leaves of trees are agitated without any sensible wind, it is a sign of wind, and perhaps of rain, because it denotes that strong and penetrating exhalations arise from the earth These signs are less equivocal, when the dry leaves and chaff are raised in a vortex and carried into the air.

THE NEW YORK

SCIENTIFIC AMERICAN:

Published Weekly at 128 *Fulton Street., (Sun Building,) New York, and No.* 13 *Court Street, Boston; the principal office being at New York.*

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